

## ABSTRACT OF THE DISCLOSURE

The preparative liquid chromatograph uses a plurality of detectors including a mass spectrometer, and a chromatogram generator is provided for generating a plurality of chromatograms each corresponding to each of the plurality of detectors. The plurality of chromatograms are converted into a respective binary signal by comparing the chromatogram with a predetermined threshold, and a logical operator performs a binary operation on the plurality of respective binary signals, whereby a resultant binary signal is generated. A separation controller controls the fraction collector of the preparative liquid chromatograph based on the resultant binary signal to separate components from a sample. When "AND" is used as the binary operation, the resultant binary signal is "1" only when all the respective binary signals are "1". This assures a high precision, high purity separation where an impurity mingling is minimized. When "OR" is adopted as the binary operation, the resultant binary signal is "1" when a component is detected by any of the plurality of detectors. This assures separation of as many components as possible appearing in the chromatograms generated by the detectors.